Scanning apparatus operable for radiaton ~~in the microwave, mm-wave and infrared ranges and~~ comprises a hollow polygonal primary drum rotatable ~~which is mounted for rotation~~ about a central axis to present ~~. The primary drum provides~~ a plurality of internally presented sides or facets~~, which are~~ capable of reflecting the ~~microwave, mm-wave and infrared~~ radiation concerned. A fixed Mangin mirror mounted within the primary drum directs such radiation ~~emanating from a view of view of the apparatus,~~ onto the internally presented sides or facets of the primary drum to be ~~, such that in each of a succession of line scanning periods, radiation emanating from the field of view is directed onto a reflective side or facet of the primary drum to be~~ reflected therefrom onto ~~a further receiving assembly comprising~~ a rotating reflective faceted ~~reflector, in the form of a~~ secondary drum.[,] The secondary drum reflects the radiation ~~is arranged to reflect the radiation striking it from the first drum to focus~~ onto a radiation receiver or sensor. The secondary drum is arranged to be rotated[,] about an axis parallel with the rotary axis of the primary drum, in synchronism with the latter, in such a way that, over each line scanning period, radiation from substantially all of the respective facet of the primary drum can reach the ~~said~~ receiver or sensor via the ~~said~~ secondary drum. ~~The invention provides a simply constructed robust and yet relatively inexpensive apparatus for forming images in the radiation concerned.~~